[a]ltering, relative to the cell in the absence of *hedgehog* treatment, at least one of (i) rate of growth, (ii) differentiation, or (iii)] increasing the rate of survival of the neuronal cells.

50. (**amended**) A method for [modulating one or more of] promoting growth[, differentiation and survival] of [a] mammalian neuronal stem cells [in an animal], comprising [administering to the animal a therapeutically] treating the cell with an effective amount of a *hedgehog* polypeptide to [alter, relative to the absence of *hedgehog* treatment, at least one of (i)] increase the rate of growth of the neuronal stem cells[, (ii) differentiation, or (iii) survival of one or more cell-types in said animal].

Please cancel claims 51-54 without prejudice.

55. (**amended**) The method of claim [54] 56, wherein said disorder is [Alzheimer's Disease or] Parkinson's Disease.

56. (**amended**) A method [of] for preventing, treating or reducing the severity of a neurodegenerative disorder, comprising administering to [said] a subject a therapeutically effective amount of a *hedgehog* polypeptide [to alter, relative to the absence of *hedgehog* treatment, at least one of (i) rate of growth, (ii) differentiation, or (iii) survival of one or more cell-types in said subject].

57. (**amended**) The method of claim 56, wherein said disorder is selected from the group consisting of Alzheimer's [Parkinson's] Disease, Huntington's Disease, Pick's Disease, Ballism, Guillain-Barre Syndrome, Amylotrophic Lateral Sclerosis, spinocerebellar degenerations, and [chronic] peripheral neuropathy.

58. (**amended**) The method of claim 57, wherein said neurodegenerative disorder includes loss of neuronal cells [are] selected from the group consisting of cholinergic neurons, GABAnergic neurons [or] and striatal neurons.

59. (**amended**) A method [of] for preventing, treating or reducing the severity of an acute, subacute or chronic injury to the nervous system in a subject, comprising administering to a

subject a therapeutically effective amount of a *hedgehog* polypeptide to alter, relative to the absence of *hedgehog* treatment, at least one of (i) rate of growth, (ii) differentiation, or (iii) survival of one or more neuronal cell-types in said subject.

60. (*reiterated*) The method of claim 59, wherein said injury is selected from the group consisting of traumatic injury, chemical injury, vasal injury, vasal deficit, infectious injury, inflammatory injury and tumor-induced injury.

61. (**amended**) The method of claim 60, wherein said [inflammatory] injury is a result of a chronic inflammatory disease.

62. (*reiterated*) The method of claim 61, wherein said inflammatory disease is multiple sclerosis.

63. (**amended**) The method of claim 60, wherein said [vasal] injury [is] includes ischemia of neuronal tissue [resulting from a stroke].

64. (**amended**) The method of claim 63, wherein said injury includes ischemia resulting from a stroke [A method for preventing the degeneration or premature death of neuronal cells in a subject, comprising administering to said subject neuronal cells which have been contacted with an effective amount of a *hedgehog* polypeptide, thereby altering, relative to the cell in the absence of *hedgehog* treatment, at least one of (i) rate of growth, (ii) differentiation, or (iii) survival of said neuronal cell].

65. (**amended**) The method of claim [64] 49, wherein said [administered] neuronal cells are introduced into a subject by cerebral grafting.

66. (**amended**) The method of claim 65, wherein said [administered] neuronal cells are derived from fetal or neonatal animals.

67. (**amended**) The method of claim 64, wherein said [administered] neuronal cell is a neuronal stem cell.

68. (*reiterated*) The method of claim 67, wherein said neuronal stem cell is a neural crest cell.

69. (**amended**) The method of claim 1, 49, 50, [54,] 56 or 59, wherein said *hedgehog* protein is administered in combination with one or more other neurotrophic factors.

70. (*reiterated*) The method of claim 69, wherein said other neurotrophic factor is selected from the group consisting of CNTF, BNTF and NGF.

71. (**amended**) The method of claim 56, [A method of preventing, treating or reducing the severity of a] wherein the neurodegenerative disorder includes degeneration of the peripheral nervous system [in a subject, comprising administering to a subject a therapeutically effective amount of a *hedgehog* polypeptide to alter, relative to the absence of *hedgehog* treatment, at least one of (i) rate of growth, (ii) differentiation, or (iii) survival of one or more cell-types in said animal].

72. (*reiterated*) The method of claim 71, wherein said disorder affects smooth muscle tissue and endocrine tissue, such as glandular tissue.

73. (*reiterated*) The method of claim 72, wherein said disorder is tachycardia or atrial cardiac arythmia.

74. (*reiterated*) The method of claim 71, wherein said disorder affects sensory or motor neurons.

75. (**amended**) The method of claim 74, wherein said disorder is selected from the group consisting of [CNS,] trauma, infarction, infection, metabolic disease, nutritional deficiency, toxic agents and chromic pain syndrome.

76. (*reiterated*) The method of claim 1, wherein said neuronal cell is a neural progenitor cell.

77. (*reiterated*) The method of claim 1, wherein said neuronal cell differentiates into a cell having a particular neural phenotype, such as a neuron or a glia.

78. (*reiterated*) The method of claim 1, wherein said neuronal cell is in the central nervous system or the peripheral nervous system.

79. (*reiterated*) The method of claim 78, wherein said *hedgehog* treatment repairs central or peripheral nerve damage.

80. (*reiterated*) The method of claim 1, wherein said *hedgehog* polypeptide mimics the effect of a naturally-occurring *hedgehog* protein.

81. (*reiterated*) The method of claim 1, wherein said *hedgehog* polypeptide antagonizes the effects of a naturally-occurring *hedgehog* protein.

82. (**amended**) The method of claim 1, wherein said *hedgehog* polypeptide comprises an amino acid sequence identical or homologous with all or a portion of an amino acid sequence designated in one of SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11, SEQ ID NO:12, SEQ ID NO:13, SEQ ID NO:14, or SEQ ID NO:34[, SEQ ID NO:40 or SEQ ID NO:41].

83. (**amended**) The method of claim 1, 49, 50, 56 or 59, wherein said *hedgehog* polypeptide has an amino acid sequence which is encoded by a nucleic acid which hybridizes under highly stringent conditions to a [identical or homologous with all or a portion of a] nucleic acid sequence [designated in one of] selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6 [or] and SEQ ID NO:7.

84. (*reiterated*) The method of claim 1, wherein said *hedgehog* polypeptide is encoded by a nucleic acid which is at least 80% identical with all or a portion of a nucleic acid sequence designated in one of SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6 or SEQ ID NO:7.

85. (*reiterated*) The method of claim 1, wherein said *hedgehog* polypeptide is encoded by a nucleic acid which is at least 90% identical with all or a portion of a nucleic acid sequence designated in one of SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6 or SEQ ID NO:7.

86. (*reiterated*) The method of claim 1, wherein said *hedgehog* polypeptide is encoded by a nucleic acid which is at least 95% identical with all or a portion of a nucleic acid sequence designated in one of SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6 or SEQ ID NO:7.

Please cancel claims 87-92 without prejudice.

93. (**amended**) The method of any one of claim 1 or 83, wherein said polypeptide includes a *hedgehog* amino acid sequence at least 80 percent identical with a sequence selected from the group consisting of residues 104-189 of SEQ ID NO:8, residues 102-187 of SEQ ID NO:9, residues 31-116 of SEQ ID NO:10, residues 102-187 of SEQ ID NO:11, [and] or residues 101-186 of SEQ ID NO:12.

94. (**amended**) The method of claim 1, wherein said polypeptide includes a *hedgehog* amino acid sequence at least 70 percent identical with a sequence selected from the group consisting of residues 27-189 of SEQ ID NO:8, residues 22-187 of SEQ ID NO:9, residues 1-116 of SEQ ID NO:10, residues 25-187 of SEQ ID NO:11, [and] or residues 24-186 of SEQ ID NO:12.

95. (**amended**) The method of claim 1, wherein said polypeptide includes a *hedgehog* amino acid sequence at least 60 percent identical with an amino acid sequence selected from the group consisting of residues 27-425 of SEQ ID NO:8, residues 22-396 of SEQ ID NO:9, residues 1-336 of SEQ ID NO:10, residues 25-437 of SEQ ID NO:11, residues 24-418 of SEQ ID NO:12, or residues 24-475 of SEQ ID NO:13, residues 1-312 of SEQ ID NO:14[, and an extracellular fragment thereof of at least 50 amino acids].

96. (*reiterated*) The method of claim 1, wherein said polypeptide includes a *hedgehog* amino acid sequence encoded by a naturally occurring vertebrate *hedgehog* gene.

97. (*reiterated*) The method of claim 96, wherein said *hedgehog* gene is a mammalian *hedgehog* gene.

98. (*reiterated*) The method of claim 97, wherein said *hedgehog* gene is a human *hedgehog* gene.

99. (*reiterated*) The method of claim 1, wherein said polypeptide includes a *hedgehog* amino acid sequence which is encoded by at least a portion of a *hedgehog* gene of vertebrate origin corresponding to residues 64-567 of SEQ ID NO:1, residues 64-561 of SEQ ID NO:2, residues 1-348 of SEQ ID NO:3, residues 73-561 of SEQ ID NO:4, and residues 70-558 of SEQ ID NO:5.

100. (*reiterated*) The method of claim 1, wherein said *hedgehog* amino acid sequence is represented in the general formula SEQ ID NO:41.

101. (*reiterated*) The method of claim 1, wherein said polypeptide has an approximate molecular weight of 19kD.

102. (*reiterated*) The method of claim 1, wherein said polypeptide includes at least 150 amino acid residues of the N-terminal half of a *hedgehog* protein.

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103. (**Amended**) The method of claim 1, wherein said polypeptide binds to a *patched* [protein] receptor.

104. (**Amended**) The method of claim 103, wherein said *patched* [protein] receptor is a *patched* [protein] receptor of a vertebrate organism

Please cancel claims 105 and 106 without prejudice.

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107. (**amended**) The method of claim 1 [106], wherein said neuronal cells are selected from the group consisting of motor neurons, cholinergic neurons, dopanergic neurons, serotenergic neurons and peptidergic neurons.